FSNSB-B

SYNTHESIZED SIGNAL GENERATOR (1 MHz to 2.6 GHz)

1. GENERAL. This procurement requires a programmable synthesized signal generator employing no more then two plug-ins and covering a frequency range of 1 MHz to 2.6 GHz.

2. CLASSIFICATION. The synthesized signal generator described herein shall meet the requirements of MIL-T-28800, Type III, Class 5, Style E, Color R for the Navy shipboard, submarine, and shore applications with the following exceptions:

a. The relative humidity requirement is limited to 95% noncondensating.

b. The operating and nonoperating altitude requirements are not invoked.

c. The electromagnetic interference requirements of MIL-T-28800 are limited to CE01, CE03, CS01, CS02 (0.05 to 100 MHz), CS06, RE01 (back panel search excluded), RE02 (14 kHz to 1 GHz), and RS03.

d. The warm-up time is extended to 72 hours.

3. OPERATIONAL REQUIREMENTS. The equipment shall be capable of generating signals within the parameters and accuracies specified herein.

3.1 Frequency characteristics.

3.1.1 Frequency range. At least 1 MHz to 2.6 GHz.

3.1.2 Frequency resolution. 1 Hz below 1.3 GHz, 2 Hz above 1.3 GHz; digital readout

3.1.3 Frequency stability.

3.1.3.1 Internal. At least _3x10-9/day.

3.1.3.2 External. Equal to external standard frequency stability.

3.1.4 Spectral purity.

3.1.4.1 Harmonics/Subharmonics. At least -30 dBc below 1.3 GHz, -20 dBc above 1.3 GHz.

3.1.4.2 NonHarmonics/Spurious. At least -55 dBc.

3.1.4.3 Signal sideband phase noise. Less than -100 dBc/Hz at 10 kHz offset.

3.1.5 Reference frequency.

3.1.5.1 Internal reference oscillator. 10 MHz.

3.1.5.2 External reference oscillator. 5 or 10 MHz, 0.5 to 2.0 Vrms into 170_.

3.2 Output characteristics.

3.2.1 Range. +10 to -136 dBm below 1.3 GHz; +7 to -136 dBm above 1.3 GHz.

3.2.2 Accuracy. _2.5 dB for level > -70 dBm; _3.5 dB for level < -70 dBm.

3.2.3 Flatness. _2.0 dB.

3.2.4 Output connector. Type N.

3.2.4.1 Impedance. 50_.

3.2.4.2 VSWR. < 2:1 (Output level < 0 dBm).

3.2.5 Digital sweep. Auto, single, or manual operation with selectable speeds 0.1, 1.0 or 50 seconds.

3.3 Modulation characteristics. F = RF center frequency.

3.3.1 Amplitude modulation.

3.3.1.1 Internal.

3.3.1.1.1 Rate. At least 400 Hz and 1 kHz _5%.

3.3.1.1.2 Depth. At least 0 to 90% (F <1.3 GHz); 0 to 50% (F >1.3 GHz).

3.3.1.1.3 Accuracy. _10% of full scale.

3.3.1.1.4 Distortion. Less than 5% at 50% depth and 1 kHz rate.

3.3.1.2 External.

3.3.1.2.1 Rate. At least 20 Hz to 10 kHz.

3.3.1.2.2 Depth. At least 0 to 90% (F <1.3 GHz); 0 to 50% (F >1.3 GHz).

3.3.1.2.3 Accuracy. _10% of full scale.

3.3.1.2.4 Distortion. Less than 5% at 50% depth and 1 kHz rate.

3.3.1.2.5 Input impedance. 600_.

3.3.2 Frequency modulation.

3.3.2.1 Internal.

3.3.2.1.1 Rate. At least 400 and 1 kHz _5%.

3.3.2.1.2 Deviation. At least 0 to 100 kHz (F <1.3 GHz); 0 to 200 kHz (F >1.3 GHz).

3.3.2.1.3 Accuracy. _5% of full scale.

3.3.2.2 External.

3.3.2.2.1 Rate. At least 20 Hz to 100 kHz.

3.3.2.2.2 Deviation. At least 0 to 100 kHz (F <1.3 GHz); 0 to 200 kHz (F >1.3 GHz).

3.3.2.2.3 Distortion. Less than 3% for dev < 200 kHz, at rates < 20 kHz.

3.3.2.2.4 Input impedance. 600_.

3.3.3 Phase modulation.

3.3.3.1 Internal.

3.3.3.1.1 Rate. At least 400 Hz and 1 kHz _5%.

3.3.3.1.2 Deviation. At least 0 to 100_ (F < 1.3 GHz); 0 to 200_ (F > 1.3 GHz).

3.3.3.1.3 Accuracy. _5% of full scale.

3.3.3.1.4 Distortion. Less than 5% at 50_ deviation and 1 kHz rate.

3.3.3.2 External.

3.3.3.2.1 Rate. At least dc to 1 MHz (F < 100 MHz); dc to 5 MHz (F > 100 MHz).

3.3.3.2.2 Deviation. At least 0 to 100_ below 1.3 GHz; 0 to 200_ above 1.3 GHz.

3.3.3.2.3 Accuracy. _10% of full scale.

3.3.3.2.4 Distortion. Less than 5% at 50_ deviation and 100 kHz rate.

3.3.3.2.5 Input impedance. 50_.

4. GENERAL REQUIREMENTS.

4.1 Power. 115/230 Vac _10%, single phase, 50, 60 or 400 Hz _10%, 350W maximum.

4.2 Dimensions. The total volume shall not exceed 46,342 cm3 (2,828 in3) with a maximum height of 18.415 cm (7.25 in).

4.3 Weight. The total weight shall not exceed 30 kg (66 lbs).

4.4 Calibration interval. The calibration interval shall be 12 months

minimum. The equipment shall be within all accuracy requirements specified herein, with a 72% or greater confidence factor following a calibration interval of 12 months.

4.5 Remote programming. The generator shall be capable of being remotely controlled via the IEEE-488 interface bus, operating as both a talker and listener, having at least the following subset of bus functions: AH1, L4, SH1, T6, SR1, DC1, and RL1.